

Developmental Biology

*An International Journal
Published under the Auspices of the
Society for Developmental Biology*

EDITOR-IN-CHIEF: Igor B. Dawid

ASSOCIATE EDITORS

Peter J. Bryant

David Epel

Gerald D. Fischbach

Norton Bernard Gilula

Elizabeth D. Hay

Lynn Landmesser

L. Dennis Smith

William F. Loomis, Jr.

Robert L. Trelstadt

James Weston

EDITORIAL ASSISTANT: Barbara Melnick

ADVISORY EDITOR

Elizabeth D. Hay

VOLUME 60, 1977



ACADEMIC PRESS
New York and London

Copyright © 1977 by Academic Press, Inc.

All Rights Reserved

No part of this publication may be reproduced or transmitted in any form, or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

Contents of Volume 60

NUMBER 1, OCTOBER 1977

Full Papers

JANET A. SAWICKI AND ROSS J. MACINTYRE. Synthesis of Ovarian Acid Phosphatase-1 in <i>Drosophila melanogaster</i>	1
GEORGE Y. MOUSA AND JOHN R. TREVITHICK. Differentiation of Rat Lens Epithelial Cells in Tissue Culture. II. Effects of Cytochalasins B and D on Actin Organization and Differentiation	14
BRUCE H. LIPTON. A Fine-Structural Analysis of Normal and Modulated Cells in Myogenic Cultures	26
JOAN V. RUDERMAN AND MARY LOU PARDUE. Cell-Free Translation Analysis of Messenger RNA in Echinoderm and Amphibian Early Development	48
PATRICIA BUCKLEY AHRENS, MICHAEL SOLURSH, AND REBECCA S. REITER. Stage-Related Capacity for Limb Chondrogenesis in Cell Culture	69
DAVID R. WADDELL AND DAVID R. SOLL. A Characterization of the Erasure Phenomenon in <i>Dictyostelium</i>	83
LAURENCE D. ETKIN. Preferential Expression of the Maternal Allele for Alcohol Dehydrogenase (ADH) in the Amphibian Hybrid <i>Ambystoma mexicanum</i> (Axolotl) $\times$ <i>Ambystoma texanum</i>	93
R. W. KULLBERG, T. L. LENTZ, AND M. W. COHEN. Development of the Myotomal Neuromuscular Junction in <i>Xenopus laevis</i> : An Electrophysiological and Fine-Structural Study	101
CAROL M. SCHILLER AND RAMSEY WALDEN. Development of Substrate Cycle Enzymes in the Hamster Small Intestine	130
FRANÇOISE MAZET. Freeze-Fracture Studies of Gap Junctions in the Developing Adult Amphibian Cardiac Muscle	139
GALO RAMIREZ AND NICHOLAS W. SEEDS. Temporal Changes in Embryonic Nerve Cell Recognition: Correlate with Cholinergic Development in Aggregate Cultures	153
RAYMOND REEVES. Hormonal Regulation of Epidermis-Specific Protein and Messenger RNA Synthesis in Amphibian Metamorphosis	163
THOMAS H. ALTON AND HARVEY F. LODISH. Developmental Changes in Messenger RNAs and Protein Synthesis in <i>Dictyostelium discoideum</i>	180
THOMAS H. ALTON AND HARVEY F. LODISH. Synthesis of Developmentally Regulated Proteins in <i>Dictyostelium discoideum</i> Which Are Dependent on Continued Cell-Cell Interaction	207
DAVID H. NICHOLS AND JAMES A. WESTON. Melanogenesis in Cultures of Peripheral Nervous Tissue. I. The Origin and Prospective Fate of Cells Giving Rise to Melanocytes	217
DAVID H. NICHOLS, ROSLYN A. KAPLAN, AND JAMES A. WESTON. Melanogenesis in Cultures of Peripheral Nervous Tissue. II. Environmental Factors Determining the Fate of Pigment Forming Cells	226
CHRISTOPH A. REINHARDT, NORMAN M. HODGKIN, AND PETER J. BRYANT. Wound Healing in the Imaginal Discs of <i>Drosophila</i> . I. Scanning Electron Microscopy of Normal and Healing Wing Discs	238
BARBARA R. HOUGH-EVANS, BARBARA J. WOLD, SUSAN G. ERNST, ROY J. BRITTEN, AND ERIC H. DAVIDSON. Appearance and Persistence of Maternal RNA Sequences in Sea Urchin Development	258
MASASUKE ARAKI AND T. S. OKADA. Differentiation of Lens and Pigment Cells in Cultures of Neural Retinal Cells of Early Chick Embryos	278
MICHAEL WILCOX AND R. J. SMITH. Regenerative Interactions between <i>Drosophila</i> Imaginal Discs of Different Types	287

Brief Notes

PAUL N. ADLER AND PETER J. BRYANT. Participation of Lethally Irradiated Imaginal Disc Tissue in Pattern Regulation in <i>Drosophila</i>	298
T. S. OKADA, KUNIO YASUDA, MICHIO HAYASHI, YOSHIO HAMADA, AND GORO EGUCHI. Lens Differentiation in Cultures of Neural Retinal Cells of Human Fetuses	305
ROSS B. HODGETTS, BECKY SAGE, AND JOHN D. O'CONNOR. Ecdysone Titters during Postembryonic Development of <i>Drosophila melanogaster</i>	310
DAVID ZIEGLER AND GENE A. MORRILL. Regulation of the Amphibian Oocyte Plasma Membrane Ion Permeability by Cytoplasmic Factors during the First Meiotic Division	318
DAVID KOBILER AND SAMUEL H. BARONDES. Lectin Activity from Embryonic Chick Brain, Heart, and Liver: Changes with Development	326
R. K. ZWERNER, R. T. ACTON, AND N. W. SEEDS. The Development Appearance of Thy-1 in Mouse Reaggregating Brain Cell Cultures	331

NUMBER 2, OCTOBER 15, 1977

Full Papers

PIERO BATTAGLIA AND MARIALUISA MELLI. Isolation of Globin Messenger RNA of <i>Xenopus laevis</i>	337
H. CLARKE ANDERSON AND SUSAN A. GRINER. Cartilage Induction <i>in Vitro</i> . Ultrastructural Studies	351
J. G. CLOUD AND A. W. SCHUETZ. Interactions of Progesterone with All or Isolated Portions of the Amphibian (<i>Rana pipiens</i>) Oocyte Surface	359
JOHN J. EPPIG. Mouse Oocyte Development <i>in Vitro</i> with Various Culture Systems	371
FREDERICK T. MARIN. Regulation of Development in <i>Dictyostelium discoideum</i> : II. Regulation of Early Cell Differentiation by Amino Acid Starvation and Intercellular Interaction	389
J. L. MARSH AND E. WIESCHAUS. Germ-Line Dependence of the maroon-like Maternal Effect in <i>Drosophila</i>	396
KIYOSHI SANO. Changes in Cell Surface Charges during Differentiation of Isolated Micromeres and Mesomeres from Sea Urchin Embryos	404
D. I. DE POMERAI, D. J. PRITCHARD, AND R. M. CLAYTON. Biochemical and Immunological Studies of Lentoid Formation in Cultures of Embryonic Chick Neural Retina and Day-Old Chick Lens Epithelium	416
MARVIN L. MEISTRICH, PATRICIA K. TROSTLE, MARSHA FRAPART, AND ROBERT P. ERICKSON. Biosynthesis and Localization of Lactate Dehydrogenase X in Pachytene Spermatocytes and Spermatids of Mouse Testes	428
ALLAN BALMAIN, DIETHARD LOEHREN, JÜRGEN FISCHER, AND ANGEL ALONSO. Protein Synthesis during Fetal Development of Mouse Epidermis. I. The Appearance of "Histidine-Rich Protein"	442
ELISABETH B. FREESE AND ERNST FREESE. The Influence of the Developing Bacterial Spore on the Mother Cell	453
KENNETH P. CHEPENIK, DIANE E. BORST, AND B. MOSELEY WAITE. Cholinephosphotransferase Activities in Early Rat Embryos and Their Associated Placentas	463
PAUL H. PATTERSON AND LINDA L. Y. CHUN. The Induction of Acetylcholine Synthesis in Primary Cultures of Dissociated Rat Sympathetic Neurons. II. Developmental Aspects	473

Brief Notes

ANNA RUTH BRUMMETT AND JAMES N. DUMONT. Intracellular Transport of Vitellogenin in <i>Xenopus</i> Oocytes: An Autoradiographic Study	482
NANCY R. STEVENSON, WILLIAM M. BYRA, AND SUSAN E. DAY. Lack of Circadian Rhythmicity of Rat Fetal Intestinal Enzymes as Compared to the Dams	487

Erratum	493
---------------	-----

Author Index for Volume 60	494
----------------------------------	-----

The Subject Index for Volume 60 will appear in the December issue as part of a cumulative index for the year 1977.

Information for Authors

Developmental Biology will publish papers on problems of development in the broadest sense. Embryonic and postembryonic development, growth, regeneration and tissue repair in plants and animals, and the analysis of these phenomena at the molecular and cellular levels are topics suitable for the journal. Papers on reproductive biology, aging, and teratology will be published only when they bear on developmental mechanisms of general interest. Papers are sought that employ the techniques and concepts of many disciplines including those of biochemistry, biophysics, cytology, experimental morphogenesis, genetics including cell genetics, immunology, neurobiology, physiology, and microbiology. In all areas, analytical rather than descriptive studies will be favored.

Original papers only will be considered. Submission of a manuscript implies the authors' assurance that the same work has not been and will not be published nor is presently submitted elsewhere, and that all persons listed as authors have given their approval for the submission of the paper; further, that any person cited as a source of personal communications has approved such citation. Explicit proof of these implied assurances may be required at the Editor's discretion. Articles and any other material published in *Developmental Biology* represent the opinions of the author(s), and should not be construed to reflect the opinions of the editor(s), the publisher, or the Society for Developmental Biology.

Articles usually do not exceed 15,000 words and must be preceded by an abstract of about 200 words that should be fully intelligible by itself. Brief notes are 2500 words or less, including the bibliography, and should have an abstract of less than 100 words. All papers will be published in English.

Manuscripts should be concise. Full documentation of results in support of conclusions should be combined with maximum brevity compatible with clarity. The discussion section should relate the present work to previous knowledge but should not be expanded into a review of the field. The standard order of sections is: abstract, introduction, materials and methods, results and discussion. Combined results and discussion may be used. In the manuscript acknowledgment, references, footnotes, tables, and figure legends should follow the discussion in that order. All pages of the manuscript should be numbered consecutively and typed double-spaced throughout. Authors should provide a running title of 55 letters and spaces or less. Use footnotes sparingly. Cite them with superscript numbers and type them on a separate sheet. With rare exceptions do not italicize for emphasis.

In the Methods section, authors should draw attention to any particular chemical or biological hazards that may be involved in carrying out the experiments described. Any relevant safety precautions should be described; if an accepted code of practice has been followed, a reference to the relevant standards should be given.

Abbreviations and units should be used consistently. Consult the lists published in the *Proceedings of the National Academy of Sciences (U.S.A.)*, the *Journal of Biological Chemistry*, and *Biochemistry* for standard abbreviations which need not be defined. Collect all abbreviations into a footnote and refer to it at the first use of an abbreviation. The use of units should follow the Systeme International. Use prefixes, e.g., μM , not $10^{-6} M$. Note that *M* stands for molar, not mole. Use hr, min, sec, rpm, and cpm without definition, without a period, and without an "s" in the plural (i.e., 20 min).

Figures should be numbered consecutively in the order of their appearance and each should have a descriptive legend. Mark all figures with the author's name.

Line drawings should be made with India ink on smooth white paper or professional-quality drafting paper. Do not submit original line drawings larger in size than 13 x 10 in.;

instead enclose smaller prints. Good quality prints are acceptable in any case. Drawings will be reduced as much as is compatible with the complexity of the figure, usually to column or page width. The lettering should be large enough to be at least 1.5 mm high after reduction.

Photographs should be the actual size for reproduction and labeled with letters 2 to 4 mm high. Figures should fit column or page width and should be at most 8 in. long. If the author decides to bleed the page (no margins), labels and figure numbers should be no closer than 3/4 in. to the margin. Figures to be bled must be $7 \times 10 \frac{1}{4}$ in. (17.8×26 cm) to allow trimming. When several figures appear together as one plate, mount them on cardboard or paper as close together as possible. The engraver will tool thin white lines between figures. Give magnifications in the legends or indicate them with a scale marker on the photograph. The second copy of each manuscript must include good-quality glossy prints of all photographs. Two reviewers' copies should be submitted when originals are oversized or mounted on heavy cardboard. The author will defray the expense of color plates.

Tables should be typed on separate pages and numbered consecutively with Arabic numerals, and each should have a concise heading.

References to the literature should be cited as: Doe (1965) has observed that . . . ; (Doe, 1955); Doe *et al.* (1960) should be used in the case of articles with more than two authors. Use suffixes a, b, etc. following the date to distinguish two or more works by the same author(s) in the same year (Doe, 1960a, b). Numbered references will no longer be accepted. Arrange literature citations in the bibliography alphabetically according to the surname of the author, using the following order of items: author(s), date of publication, title of article or book, journal name, volume number, inclusive pages, publisher and city (for books only). Abbreviate titles of journals according to *Chemical Abstracts' Service Source Index*.

Page proofs rather than galleys will be sent. This speeds production. Detailed instructions will be sent with proofs. A quick response and minimal changes on proof are imperative to maintain schedules.

Features will include announcements of meetings and courses in the field of developmental biology, and some meeting reports. Persons interested in preparing meeting reports are encouraged to contact the Editor.

To submit a manuscript, send two copies to Igor B. Dawid, Department of Embryology, Carnegie Institution of Washington, 115 West University Parkway, Baltimore, Maryland 21210, Tel. (301) 235-0460. Indicate the name, address, and telephone number of the author who should be contacted in editorial matters.